Academic-Practice Partnerships: a Multidisciplinary Approach

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JHU Center of Excellence in Environmental Public Health Tracking

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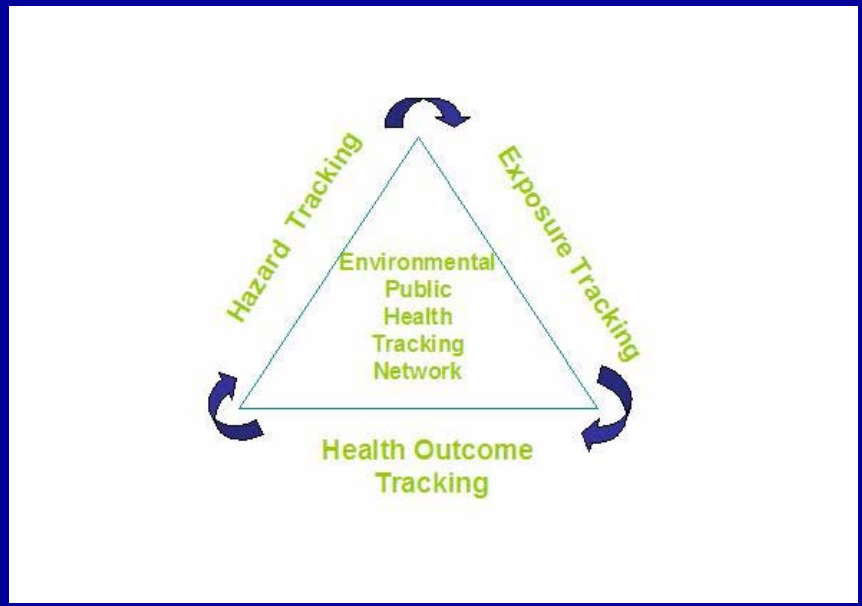
JHU Center Mission Areas

- Support, Assist, Advise
- Applied Research, Synthesis, Translation
- Information Dissemination, Outreach, Advocacy



Hopkins Tracking Center Goals

1. Provide technical and research support to our state and local partners
2. Strengthen the environmental public health workforce through education, training, and technical assistance
3. Advance research to investigate the potential links between health effects and the environment

Developing scientific methods for an emerging field

- Selecting and refining tracking endpoints
- Developing reliable and adaptable measures
- Supporting environmental epidemiology
- Advancing biomonitoring
- Data quality and presentation
- Communication and translation
- Responsive to communities and susceptible populations
- Improved geographic and temporal resolution
- Links to policy and prevention

Hopkins Activities

- Tracking Applications
  - Accomplishments: Linkage case studies, Indicators
  - Ongoing: Develop practical applications
- Education and Training
  - Accomplishments: Tracking Methods Course, Data Display and Dissemination Course
  - Ongoing: Core Competencies for Tracking
- Research and Methods Development
  - Accomplishments:, Student Fellowships, Policy Assessment
  - Ongoing: Epidemiological Study, Methods Research

Faculty Fellowship program

- Builds on core faculty expertise
- Support the Tracking Center's technical assistance efforts to students and state and local tracking grantees in areas of
  - Data linkage
  - Environmental health surveillance analysis and visualization techniques
  - Methods related to communicating surveillance analysis findings

Faculty Fellows

Frank Curriero

Francesca Dominici

Janet DiPietro

Norma Kanarek

Faculty Fellows' Expertise

Frank Curriero

Biostatistics

Geographic Information Systems

Francesca Dominici

Biostatistics

Environmental Epidemiology

Janet DiPietro

Developmental psychology

Neurobehavioral functioning

Norma Kanarek

Cancer epidemiology

Methods for state/local analyses

Core Faculty

Core Faculty Expertise

Tom Burke

Epidemiology

Environmental health surveillance

Beth Resnick

Public Health Practice

Environmental health

Mary Fox

Environmental health policy

Risk assessment

Eliseo Guallar

Epidemiology

Cardiovascular disease

Faculty Fellows' Contributions

- Training
- Consultation
- Research and applications development
  - National air pollution policy
  - State and local practice

Training and Consultation

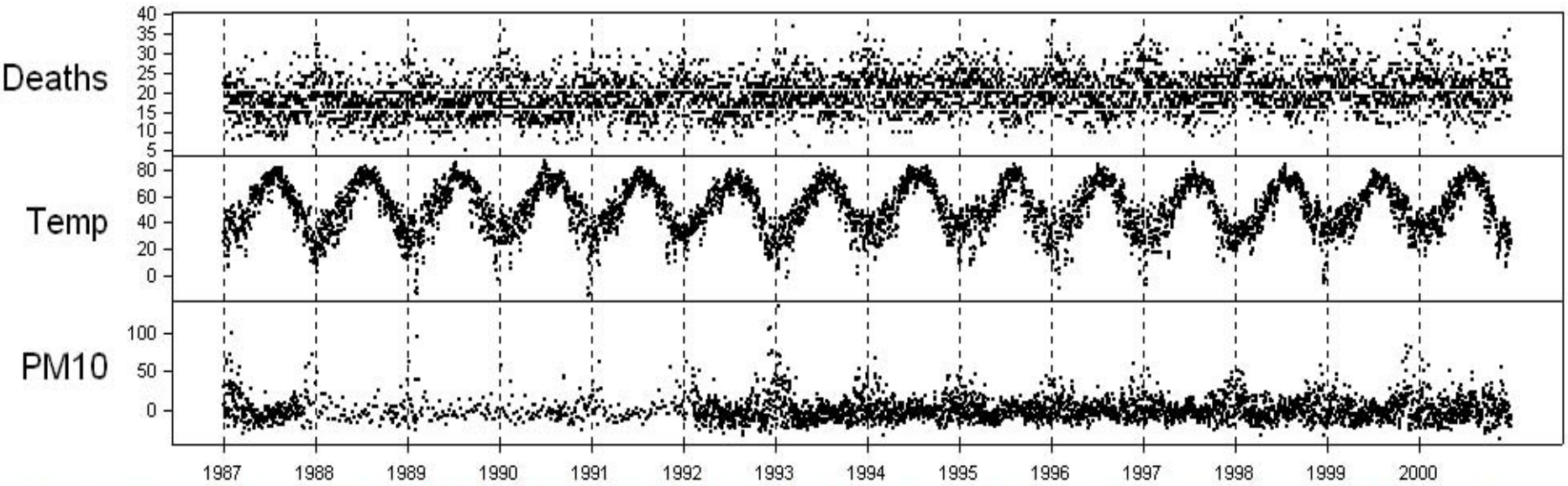
- Training
  - Student research support
  - National conference training
- Consultation with states
  - PHASE project – time series analysis
  - Interpretation of low birth weight as health indicator

Research: Ozone project background

- Results of the National Morbidity Mortality Air Pollution Study (1987-2000) have found an association between daily changes in ozone and increased risk of all cause mortality
- Need to extend methods for estimating exposure-response curve to investigate whether there is a threshold

National Morbidity Mortality Air Pollution Study

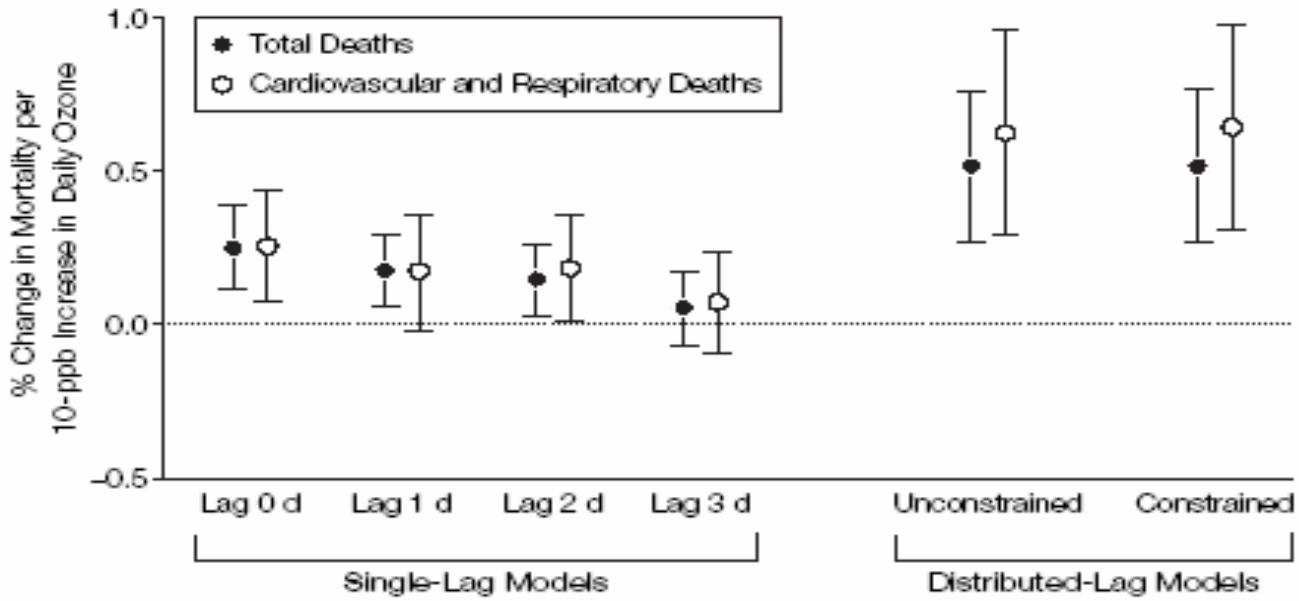
1987—2000



Main Result of Bell et al 2004 JAMA

OZONE AND MORTALITY IN US URBAN COMMUNITIES

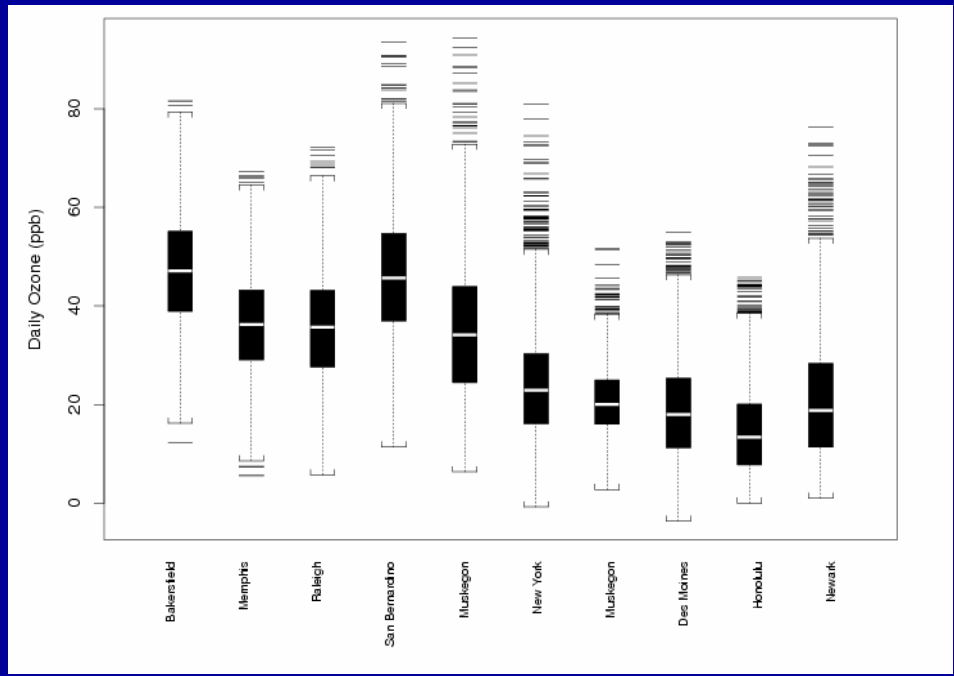
Figure 1. Percentage Change in Daily Mortality for a 10-ppb Increase in Ozone for Total and Cardiovascular Mortality, for Single-Lag and Distributed-Lag Models



The single-lag model reflects the percentage increase in mortality for a 10-ppb increase in ozone on a single day. The distributed-lag model reflects the percentage change in mortality for a 10-ppb increase in ozone during the previous week. Error bars indicate 95% posterior intervals.

Research: Ozone project

- Problem
  - There are several cities in the US that have non-overlapping ranges of ozone levels
- Purpose
  - Develop new statistical approach for estimating national-average exposure-response that accounts for non-overlapping ranges of exposure



Research: Ozone project

- Products:
  - Broadly applicable methods for estimating exposure-response
  - Ozone case study to inform national policy
  - Results, software, data, methods disseminated via Internet
  - Prior work available: www.ihapss.jhsph.edu

Applications for local tracking

- Problem
  - Addressing apparent local disease excesses
- Purpose
  - Create a framework for analysis integrating epidemiological and statistical tools
  - Support proactive response

Applications for local tracking

- Products
  - Investigation plan applicable to any endpoint
  - Analytical methods “linked” to plan
  - Multi-county Maryland pilot project
  - Plan and methods available via Tracking Center

- Prior community health work
  http://www.communityphind.net/index.html

Applications: Project development

- Selected cancers in subset of Maryland counties
- Working with the health officers
- Collaboration within Center
  - Statistical methods
  - Exposure and risk

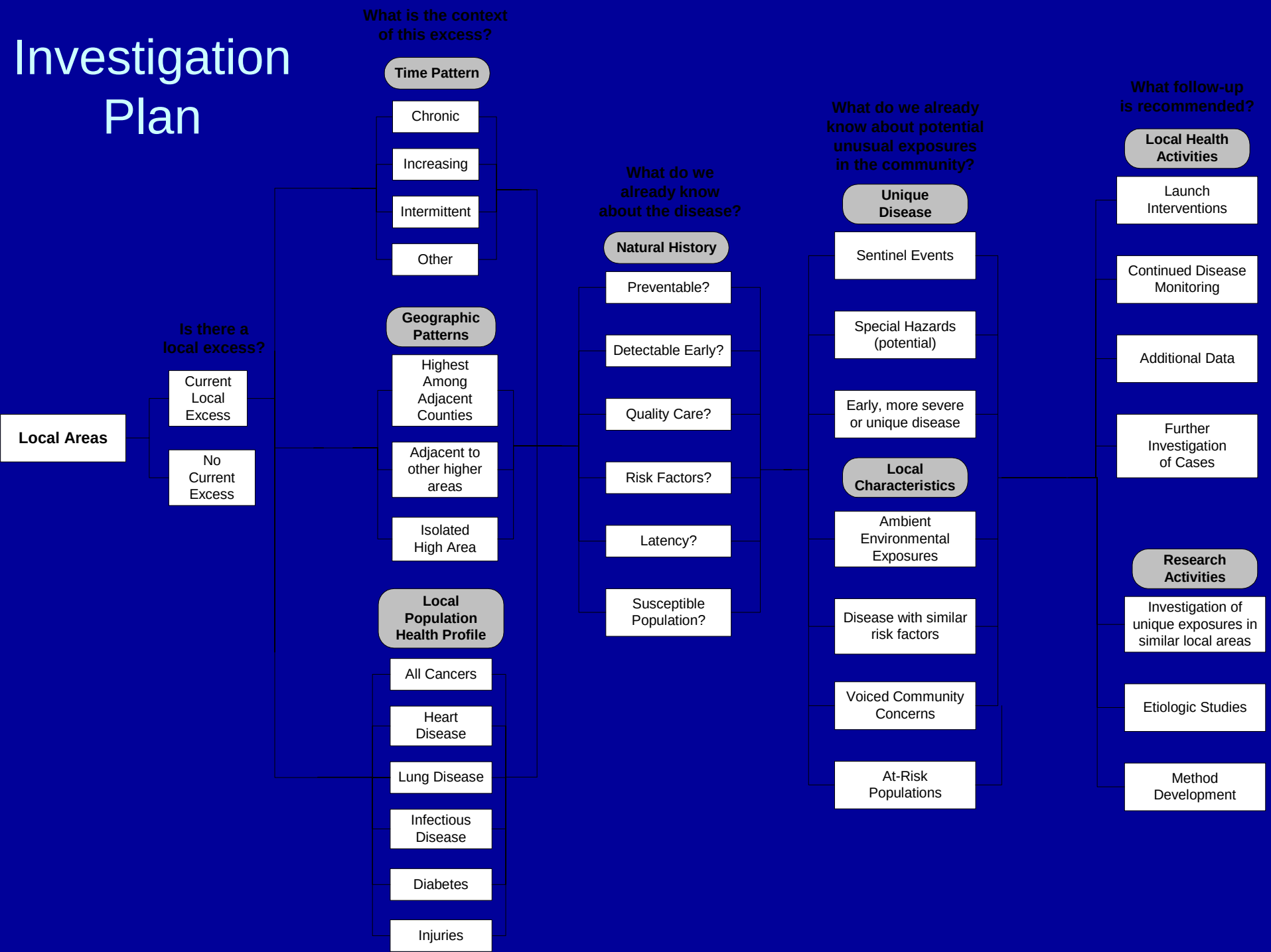
Applications: Investigation questions for local tracking

- Is there a local excess?
- What is the context of this excess?
  - Temporal and geographic pattern
  - Local health profile
- What do we already know about disease?
  - Natural history
    - Preventable
    - Detectable early
    - Quality care
    - Risk factors
    - Latency
    - Susceptible population

Applications: Investigation questions for local tracking

- What do we already know about exposures in community?
  - Unique disease?
    - Sentinel events
    - Special hazards
  - Local characteristics
    - Ambient exposures
    - Other disease with similar risk factors
    - Community concerns
    - At-risk populations
- What follow-up?
  - Local health activities
    - Intervention
    - Additional data or monitoring
  - Research activities
    - Unique exposure present in other localities?
    - Etiologic studies

Investigation Plan



Meeting the challenges

- Our multidisciplinary team
  - Addressing CDC and partner priorities
  - Developing the “toolbox”
    - New methods
    - Practical applications
  - Offering expertise on emerging issues
    - Biomonitoring
    - Child development
    - Cumulative risk